

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) A signal line driving circuit ~~of a liquid crystal display~~ for applying a pre-charging voltage and a gradation voltage corresponding to a picture data to a plurality of signal lines comprising:

a picture data comparator for comparing, for each signal line, picture data between two consecutive horizontal periods by comparing said picture data before one horizontal period with said picture data to be next displayed in the one horizontal period; and

a switch controller for controlling a supply of said pre-charging voltage in accordance with a result compared by said picture data comparator.

2. (Currently Amended) A signal line driving circuit ~~of a liquid crystal display~~ according to claim 1, wherein said switch controller does not apply said pre-charging voltage if said gradation voltage of said picture data to be next displayed is within a certain range of said gradation voltage of said picture data before one horizontal period, and said pre-charging voltage being independent from said gradation voltage.

3. (Currently Amended) A signal line driving circuit ~~of a liquid crystal display~~ according to claim 1, wherein said switch controller does not apply said pre-charging voltage if said gradation voltage of said picture data to be next displayed agrees with said gradation voltage of said picture data before one horizontal period.

4. (Currently Amended) A signal line driving circuit ~~of a liquid crystal display~~ according to claim 1, wherein said switch controller applies said pre-charging voltage only if a polarity of said gradation voltage of said picture data to be next displayed is different from a polarity of said gradation voltage of said picture data before one horizontal period.

5. (Currently Amended) A signal line driving circuit ~~of a liquid crystal display~~ according to claim 2, wherein said switch controller applies said pre-charging voltage if a polarity of said gradation voltage of said picture data to be next displayed is different from a polarity of said gradation voltage of said picture data before one horizontal period.

6. (Currently Amended) A signal line driving circuit ~~of a liquid crystal display~~ according to claim 3, wherein said switch controller applies said pre-charging voltage if a polarity of said gradation voltage of said picture data to be next displayed is different from a polarity of said gradation voltage of said picture data before one horizontal period.

7. (Currently Amended) A signal line driving circuit ~~of a liquid crystal display~~ according to claim 1, wherein said switch controller

applies said gradation voltage by using a first operational amplifier suitable for a boosting operation if said gradation voltage of said picture data to be next displayed is higher than said gradation voltage of said picture data before one horizontal period,

applies said gradation voltage by using a second operational amplifier suitable for a voltage drop operation if said gradation voltage of said picture data to be next displayed is lower than said gradation voltage of said picture data before one horizontal period, and

applies said gradation voltage by using any one of said first and second operational amplifiers if said gradation voltage of said picture data to be next displayed is equal to said gradation voltage of said picture data before one horizontal period.

8. (Currently Amended) A signal line driving method ~~of a liquid crystal display~~ for applying a pre-charging voltage and a gradation voltage corresponding to a picture data to a plurality of signal lines, the method comprising the step of:

for each signal line, comparing picture data between two consecutive horizontal periods by comparing said picture data

before one horizontal period with said picture data to be next displayed in the one horizontal period; and

controlling a supply of said pre-charging voltage in accordance with that compared result.

9. (Currently Amended) A signal line driving method ~~of a liquid crystal display~~ according to claim 8, wherein it does not apply said pre-charging voltage if said gradation voltage of said picture data to be next displayed is within a certain range of said gradation voltage of said picture data before one horizontal period.

10. (Currently Amended) A signal line driving method ~~of a liquid crystal display~~ according to claim 8, wherein it does not apply said pre-charging voltage if said gradation voltage of said picture data to be next displayed agrees with said gradation voltage of said picture data before one horizontal period.

11. (Currently Amended) A signal line driving method ~~of a liquid crystal display~~ according to claim 9, wherein it applies said pre-charging voltage only if a polarity of said gradation voltage of said picture data to be next displayed is different from a polarity of said gradation voltage of said picture data before one horizontal period.

12. (Currently Amended) A signal line driving method ~~of a liquid crystal display~~ according to claim 9, wherein it applies said pre-charging voltage if a polarity of said gradation

voltage of said picture data to be next displayed is different from a polarity of said gradation voltage of said picture data before one horizontal period.

13. (Currently Amended) A signal line driving method ~~of a liquid crystal display~~ according to claim 10, wherein it applies said pre-charging voltage if a polarity of said gradation voltage of said picture data to be next displayed is different from a polarity of said gradation voltage of said picture data before one horizontal period.

14. (Currently Amended) A signal line driving method ~~of a liquid crystal display~~ according to claim 8, wherein it

applies said gradation voltage by using a first operational amplifier suitable for a boosting operation if said gradation voltage of said picture data to be next displayed is higher than said gradation voltage of said picture data before one horizontal period,

applies said gradation voltage by using a second operational amplifier suitable for a voltage drop operation if said gradation voltage of said picture data to be next displayed is lower than said gradation voltage of said picture data before one horizontal period, and

applies said gradation voltage by using any one of said first and second operational amplifiers if said gradation voltage of said picture data to be next displayed is equal to said

gradation voltage of said picture data before one horizontal period.

15. (previously presented) A signal line driving circuit, comprising:

a signal line connection for supplying signal line potential to an active matrix display signal line during consecutive horizontal time periods, a first portion of each time period being reserved for supplying a fixed value pre-charging voltage and a second portion of each time period being reserved for supplying a picture data gradation voltage;

a middle potential ( $V_p$ ) terminal for providing the fixed value pre-charging voltage;

a gradation voltage source corresponding to a picture data to a plurality of signal lines and providing the picture data gradation voltage, the gradation voltage source comprising

a last data latch (11) for holding picture data from a last horizontal period before a current horizontal period,

a comparator (12), connected to an output of the last data latch, for comparing the picture data from the last horizontal period with a picture data to be next displayed during the current horizontal period, for each signal line, and

a switch controller (13) for supplying the middle potential ( $V_p$ ) to the signal line connection, as the pre-charging voltage, in accordance with a compared result by the comparator,

the gradation voltage and the pre-charging voltage being applied to the signal line connection at mutually exclusive times.

16. (Currently Amended) The driving circuit of claim 15, further comprising:

current data latch (33) for receiving the picture data to be next displayed for each signal line, the current data latch providing picture data to the last data latch;

a decoder (34) connected to an output of the current data latch;

an analog switch (35) connected to an output of the decoder and supplying ~~gradation~~ gradation voltages corresponding to the picture data to be next displayed;

an output circuit (36) connected to an output of the analog switch;

a first switch (SW1) connected on an input side to an output of the output circuit, and connected on an output side to the signal line connection; and

a second switch (SW2) connected on an input side to the middle voltage terminal, and connected on an output side to the signal line connection,

the first switch and the second switch operating under control of the switch controller so that when the first switch is turned on, the gradation voltage is applied from the output

circuit to the signal line connection, and when the second switch is turned on, the middle potential is supplied to the signal line connection as the pre-charging voltage.

17. (previously presented) The driving circuit of claim 16, further comprising:

a third switch under control of the switch controller;  
and

another middle potential connection (Vq) connected via the third switch to the signal line connection to pre-charge the signal line connection in alternating current inversion driving, wherein,

the switch controller has a polarity inversion signal input,

the comparator compares n-bits of the picture data from the last data latch with n-bits of the picture data to be next displayed for each signal line, and then outputs the comparison result to the switch controller,

~ the switch controller controls so as to turn on and off the first, second and third switches, on the basis of the comparison result signal CMP and the inputted polarity inversion signal.

18. (previously presented) The driving circuit of claim 15, wherein, when said gradation voltage of said picture data to be next displayed agrees with said gradation voltage of said



picture data before one horizontal period, and when said gradation voltage of said picture data to be next displayed is within a certain range of said gradation voltage of said picture data before one horizontal period, said switch controller does not apply said pre-charging voltage to said signal line connection.

19. (previously presented) The driving circuit of claim 15, wherein said switch controller applies said pre-charging voltage only if a polarity of said gradation voltage of said picture data to be next displayed is different from a polarity of said gradation voltage of said picture data before one horizontal period.

20. (previously presented) The driving circuit of claim 15, wherein said switch controller:

applies said gradation voltage by using a first operational amplifier suitable for a boosting operation if said gradation voltage of said picture data to be next displayed is higher than said gradation voltage of said picture data before one horizontal period,

applies said gradation voltage by using a second operational amplifier suitable for a voltage drop operation if said gradation voltage of said picture data to be next displayed is lower than said gradation voltage of said picture data before one horizontal period, and

applies said gradation voltage by using any one of said first and second operational amplifiers if said gradation voltage of said picture data to be next displayed is equal to said gradation voltage of said picture data before one horizontal period.

21. (new) The signal line driving circuit of claim 1, wherein, said comparator cooperates high order bits of the picture data with high order bits of the next picture data.

22. (new) The signal line driving circuit of claim 21, wherein, said driving circuit further comprises a latch circuit only latching said high order bits.

23. (new) The signal line driving circuit of claim 1, wherein, the picture data comparator compares, for each signal line, picture data between two consecutive horizontal periods, within a same picture frame, by comparing said picture data before one horizontal period with said picture data to be next displayed in the one horizontal period.